CLAIMS

1. An isomerization process comprising the step of contacting a slurry or a solution comprising the meso or meso-like form of one or more bridged metallocene compounds of group 4 of the Periodic Table of the Elements having C₂ or C₂-like symmetry with an isomerization catalyst of formula (I)

$$[R_4W]^{\dagger}X^{-}$$
 (I)

wherein:

W is a nitrogen or a phosphorus atom;

R, equal to or different from each other, are C_1 - C_{40} hydrocarbon radicals optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; two R can also join to form a saturated or unsaturated C_5 - C_6 membered cycle containing the atom W or two R can also join to form a radical of formula (II)

$$R^{1} \stackrel{P}{\sim} P = R^{1}$$

wherein R^1 , equal to or different from each other, are C_1 - C_{20} hydrocarbon radicals optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; P is a phosphorous atom bonded with a double bond to the atom W; and

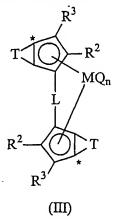
X is an halide atom.

- 2. The isomerization process according to claim 1 wherein a mixture comprising the meso or meso-like form and the racemic or racemic-like form of one or more bridged metallocene compounds of group 4 of the Periodic Table of the Elements having C₂ or C₂-like symmetry is used.
- 3. The isomerization process according to claims 1-2 wherein R are linear or branched, cyclic or acyclic, C₁-C₄₀-alkyl, C₂-C₄₀ alkenyl, C₂-C₄₀ alkynyl, C₆-C₄₀-aryl, C₇-C₄₀-alkylaryl or C₇-C₄₀-arylalkyl radicals, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; two R can also join to form a saturated or unsaturated C₅-C₆ membered cycle containing the atom W; and X is chloride (Cl) or bromide (Br).
- 4. The isomerization process according to anyone of claims 1-3 wherein W is a nitrogen atom.

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5. The isomerization process according to anyone of claims 1-4 wherein the process is carried out in an aprotic solvent, either polar or apolar.

- 6. The isomerization process according to claim 5 wherein the aprotic solvent is an aromatic or aliphatic hydrocarbon, optionally halogenated or optionally containing heteroatoms belonging to the group 16 of the periodic table, or an ether.
- 7. The isomerization process according to claim 6 wherein the process is carried out in the presence of one or more ethers.
- 8. The isomerization process according to anyone of claims 1-7 wherein the process is carried out at a temperature ranging from 0 to a temperature below the temperature of decomposition of the bridged metallocene compound in the selected solvent.
- 9. The isomerization process according to anyone of claims 1-8 wherein the bridged metallocene compounds having C₂ symmetry or C₂-like symmetry has formula (III)



wherein:

M is a transition metal belonging to group 4,

the substituents Q, equal to or different from each other, are monoanionic sigma ligands selected from the group consisting of hydrogen, halogen, R^8 , OR^8 , $OCOR^8$, SR^8 , NR^8_2 and PR^8_2 , wherein R^8 is a linear or branched, cyclic or acyclic, C_1 - C_{20} -alkyl, C_2 - C_{20} alkenyl, C_2 - C_{20} alkynyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radical optionally containing one or more Si or Ge atoms;

or two Q can optionally form a substituted or unsubstituted butadienyl radical or a OR'O group wherein R' is a divalent radical selected from C_1 - C_{20} alkylidene, C_6 - C_{40} arylidene, C_7 - C_{40} alkylarylidene and C_7 - C_{40} arylalkylidene radicals;

n is an integer equal to the oxidation state of the metal M minus 2;

L is a divalent bridging group selected from C1-C20 alkylidene, C3-C20 cycloalkylidene,

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C₆-C₂₀ arylidene, C₇-C₂₀ alkylarylidene, or C₇-C₂₀ arylalkylidene radicals optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and silylidene radical containing up to 5 silicon atoms;

 R^2 , R^3 , equal to or different from each other, are hydrogen atoms, halogen atoms or linear or branched, cyclic or acyclic, C_1 - C_{20} -alkyl, C_2 - C_{20} alkenyl, C_2 - C_{20} alkynyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radicals, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; T, equal to or different from each other, is a moiety of formula (IIIa) or (IIIb):

 \mathbb{R}^{7} \mathbb{R}^{6} \mathbb{R}^{5} \mathbb{R}^{5} \mathbb{R}^{7}

(IIIa) (IIIb)

wherein:

the atom marked with the symbol * bonds the atom marked with the same symbol in the compound of formula (III);

T¹ is a sulphur atom, a oxygen atom or a CR¹⁰₂ or a NR¹² group, wherein R¹⁰, equal to or different from each other, are hydrogen atoms, halogen atoms or linear or branched, cyclic or acyclic, C₁-C₂₀-alkyl, C₂-C₂₀ alkenyl, C₂-C₂₀ alkynyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl or C₇-C₂₀-arylalkyl radicals, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; and R¹² is a or linear or branched, cyclic or acyclic, C₁-C₂₀-alkyl, C₂-C₂₀ alkenyl, C₂-C₂₀ alkynyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl or C₇-C₂₀-arylalkyl radical, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements;

 T^2 is a CR^{10} group or a nitrogen atom; wherein R^{10} is a hydrogen atom, a halogen atom or linear or branched, cyclic or acyclic, C_1 - C_{20} -alkyl, C_2 - C_{20} alkenyl, C_2 - C_{20} alkenyl, C_3 - C_{20} -aryl, C_4 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radical, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements;

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with the proviso that if T² is a nitrogen atom T¹ is CR¹⁰₂;

R⁴, R⁵, R⁶, R⁷, and R¹¹, equal to or different from each other, are hydrogen atoms, halogen atoms or linear or branched, cyclic or acyclic, C₁-C₂₀-alkyl, C₂-C₂₀ alkenyl, C₂-C₂₀ alkynyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl or C₇-C₂₀-arylalkyl radicals, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; or two adjacent R⁴, R⁵, R⁶, R⁷, R¹⁰ and R¹¹ form one or more 3-7 membered ring optional containing heteroatoms belonging to groups 13-17 of the periodic table.

- 10. The isomerization process according to claim 9 wherein in the compound of formula (III) M is zirconium, or hafnium; the substituents Q are the same and are halogen atoms, R⁸, OR⁸ and NR⁸₂; wherein R⁸ is preferably a C₁-C₁₀ alkyl, C₆-C₂₀ aryl or C₇-C₂₀ arylalkyl group, optionally containing one or more Si or Ge atoms; L is a divalent group (ZR⁹_m)_q; Z being C, Si, Ge, N or P, and the R⁹ groups, equal to or different from each other, being hydrogen or a linear or branched, cyclic or acyclic, C₁-C₂₀-alkyl, C₂-C₂₀ alkenyl, C₂-C₂₀ alkynyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl or C₇-C₂₀-arylalkyl radicals or two R⁹ can form a aliphatic or aromatic C₄-C₇ ring.
- 11. The isomerization process according to claims 9-10 wherein in the compound of formula (II) R² and R¹¹, equal to or different from each other are linear or branched C₁-C₂₀-alkyl radicals; R⁴ and R¹⁰, equal to or different from each other, are hydrogen atoms or C₆-C₂₀-aryl, or C₇-C₂₀-arylalkyl radicals; T¹ is sulphur and T² is a CR¹⁰ group.

